ST-JX661/SE200

SERVICE MANUAL

US Model
Canadian Model
ST-JX661
AEP Model
UK Model
E Model
Australian Model
ST-JX661/SE200
Chinese Model
ST-SE200

Photo : ST-JX661

SPECIFICATIONS

FM tuner section

Frequency range	87.5–108 MHz
Antenna terminals	75 ohms, unbalanced
Intermediate frequency	10.7 MHz
Sensitivity	at 50 dB quieting (mono) 22.1 dBf, 7µV/75Ω (stereo) 42.1dBf, 7µV/75Ω
Usable sensitivity (IHF)	19.5 dBf, 5µV/75Ω at 75 kHz deviation
S/N	80 dB (mono), 75 dB (stereo)
Harmonic distortion	at 1 kHz 0.3% (mono), 0.5% (stereo)
Frequency response	30 Hz–15 kHz (+0.5/–2.0 dB)
Separation	35 dB at 1 kHz
Selectivity	55 dB at 400 kHz
Output	at 75 kHz deviation 775 mV, 4.7 kilohms

AM tuner section

Frequency range	US, Canadian model : 531–1,710 kHz (9 kHz) 530–1,710 kHz (10 kHz) AEP, UK, German, Italian model : 522–1,611 kHz (9 kHz) E, Singapore, Australian, Chinese, Malaysia, Saudi Arabia model : 531–1,602 kHz (9 kHz) 530–1,710k Hz (10 kHz)
Intermediate frequency	450 kHz
Usable sensitivity	(with AM loop antenna) AM : 500µV/m
Signal-to-noise ratio	54 dB (500mV/m, 999 kHz)
Harmonic distortion	0.5 % (50 mV/m, 400Hz)
Selectivity	50 dB

General

Power requirements	US, Canadian model : 120 V AC, 60 Hz AEP, German, Italian model : 220-230 V AC, 50/60Hz UK, Australian model : 240 V AC, 50/60Hz E, Singapore, Chinese, Malaysia, Saudi Arabia model : 110-120 V/220-240 V AC, 50/60 Hz adjustable
Power consumption	7 W
Dimensions	430 x 82 x 279 mm (w/h/d) (17 x $3^1/_4$ x 11 inches)
Mass	Approx. 2.4 kg (5 lb 4 oz)
Supplied accessorise	Audio cord (1) AM loop antenna (1) FM wire antenna (1)

Design and specifications are subject to change without notice.

MICROFILM

FM STREO/FM-AM TUNER

SONY®

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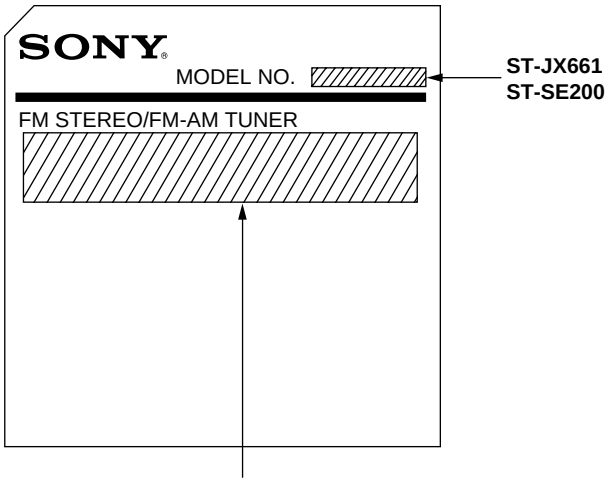
MODEL IDENTIFICATION

– Model Number Label –



US, Canadian model : AC 120~60Hz
UK, Australian model : AC 240~50Hz
AEP, German, Italian model : AC 220–230V~50Hz
E, Singapore, Chinese,
Malaysia, Saudi Arabia model : AC 110–120 V/220–240 V ~50/60 Hz

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer :
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers).
Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

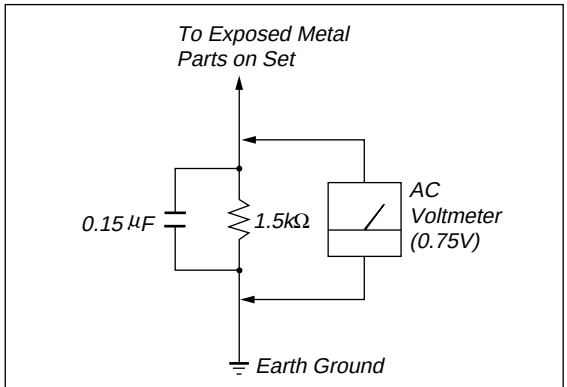


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

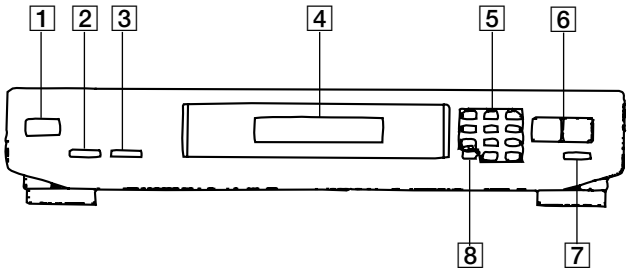
**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION.
REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1
GENERAL

LOCATION OF CONTROLS



1 POWER button
2 MEMORY SCAN button
3 STEREO/MONO button
4 Display window
5 Numeric buttons
6 TUNING buttons
7 MEMORY button
8 BAND button

SECTION 2
ADJUSTMENTS

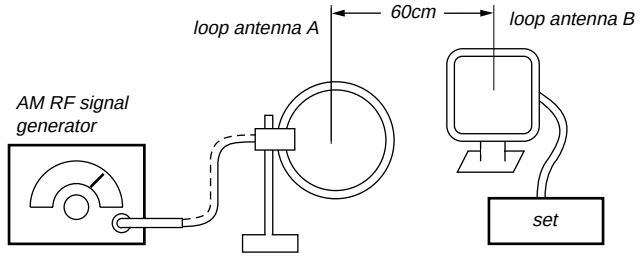
TUNER SECTION

Note 1 : The adjustment should be performed in the publication. (AM ⟶ FM)

Note 2 : As a front-end (FE1) is difficult to repair if faulty, replace it with new one.

AM Section Adjustment

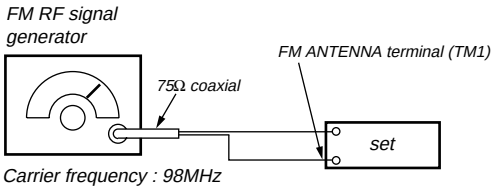
Setting :



Carrier frequency : 1,050kHz (US, Canadian)
999kHz (EXCEPT US, Canadian)
Modulation : 400Hz, 30% modulation

FM Section Adjustment

Setting :



Carrier frequency : 98MHz
Modulation : 1kHz, 75kHz deviation

AM Tuned Indication Lighting Level Adjustment

Band : AM

Procedure :

1. Set loop antenna A so that the loop antenna B input level becomes 316.2µV (50dBµ)
2. Tune the set to 1,050kHz (US, Canadian) or 999kHz (EXCEPT US, Canadian).
3. Adjust RV41 so that the TUNED light up.
4. Confirm that the TUNED light off with AM RF signal generator output level set at 251.2µV (48dBµ)
5. Confirm the FM tuned indication lighting level and adjust if necessary.

Adjustment Location : TUNER board

FM Tuned Indication Lighting Level Adjustment

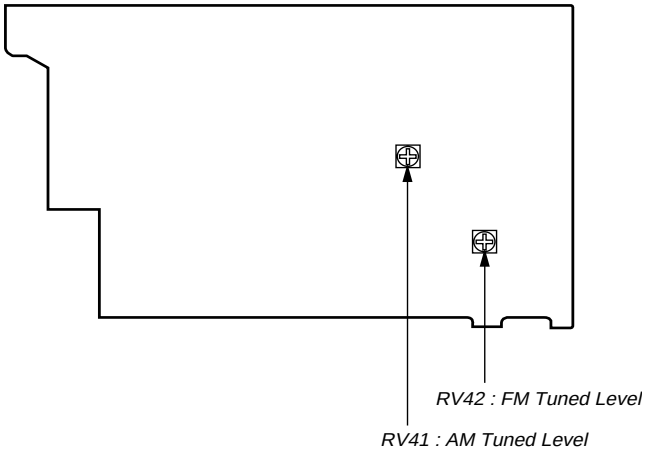
Band : FM

Procedure :

1. Supply a 31.6µV (30dBµ) 98 MHz signal to the ANTENNA terminal (TM1).
2. Tune the set to 98MHz.
3. Adjust RV42 so that the TUNED light up.
4. Confirm that the TUNED light off with FM RF signal generator output level set at 25.1µV (28dBµ).

Adjustment Location : TUNER board

[TUNER BOARD] – Component side –



SECTION 3
EXPLANATION OF IC TERMINAL

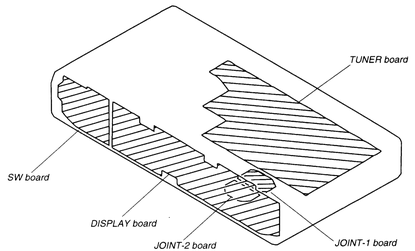
IC701 µPD78042AGF-078-3B9 (FL DRIVER)

Pin No.	Pin name	I/O	Description
1	G7	O	FL drive.
2	G6	O	
3	G5	O	
4	G4	O	
5	G3	O	
6	G2	O	
7	G1	O	
8	VDD	–	Power supply (+5V)
9	PLL CE	O	Chip enable output to PLL IC.
10	PLL DATA OUT	O	PLL data output.
11	PLL CLK	I	PLL clock input.
12	PLL DATA IN	I	PLL data input.
13	AST	I	Tuned signal input.
14	ST	I	Stereo signal input.
15	NC	–	Not used. (Ground)
16	NC	–	Not used. (Ground)
17	RESET	I	System reset input.
18	DC CUT	–	Not used. (Open)
19	NC	–	Not used. (Open)
20	AVSS (GND)	–	Ground.
21	MUTE	O	Line mute output.
22	NC	–	Not used. (Open)
23	NC	–	Not used. (Open)
24	NC	–	Not used. (Open)
25	MODEL	–	Not used. (Ground)
26	KEY 3	I	Key input.
27	KEY 2	I	Key input.
28	KEY 1	I	Key input.
29	AVDD	–	Power supply (+5V)
30	AVREF	–	Analog voltage reference.
31	GND	–	Ground.
32	NC	–	Not used. (Open)
33	GND	–	Ground.
34	X1	I	System clock. (5MHz)
35	X2	O	System clock. (5MHz)
36	NC	–	Not used. (Open)
37	POWER SW	I	Power switch input.
38	NC	–	Not used. (Ground)
39	NC	–	Not used. (Ground)
40	NC	–	Not used. (Ground)

Pin No.	Pin name	I/O	Description
41	NC	–	Not used. (Ground)
42	NC	–	Not used. (Ground)
43	NC	–	Not used. (Ground)
44	POWER	O	Power ON/OFF control signal output.
45	NC	–	Not used. (Ground)
46	NC	–	Not used. (Ground)
47	NC	–	Not used. (Ground)
48	IC	–	Not used. (Ground)
49	NC	–	Not used. (Ground)
50	RIN	I	Reset signal input.
51	NC	–	Not used. (Ground)
52	VDD	–	Power supply. (+5V)
53	IS 1	I	Model identification check input.
54	IS 2	I	
55	IS 3	I	
56	IS 4	I	
57	GND	–	Ground.
58	P18	O	FL drive.
59	P17	O	
60	P16	O	
61	P15	O	
62	P14	O	
63	P13	O	
64	P12	O	
65	P11	O	
66	P10	O	
67	P9	O	
68	P8	O	
69	P7	O	
70	P6	O	
71	VFL	–	FL drive –25V power supply.
72	P5	O	FL drive.
73	P4	O	
74	P3	O	
75	P2	O	
76	P1	O	
77	G11	O	
78	G10	O	
79	G9	O	
80	G8	O	

SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION



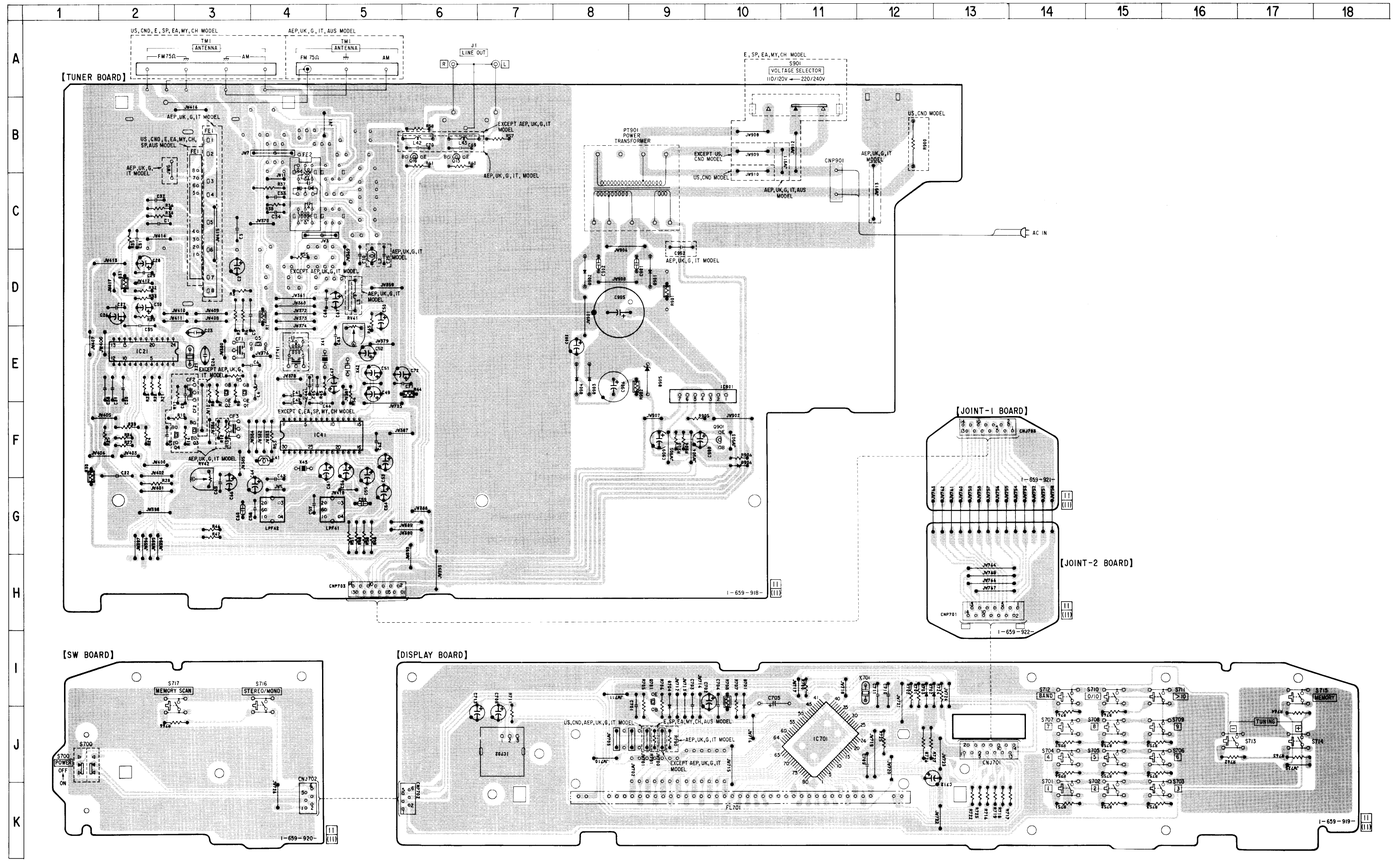
4-2. PRINTED WIRING BOARDS

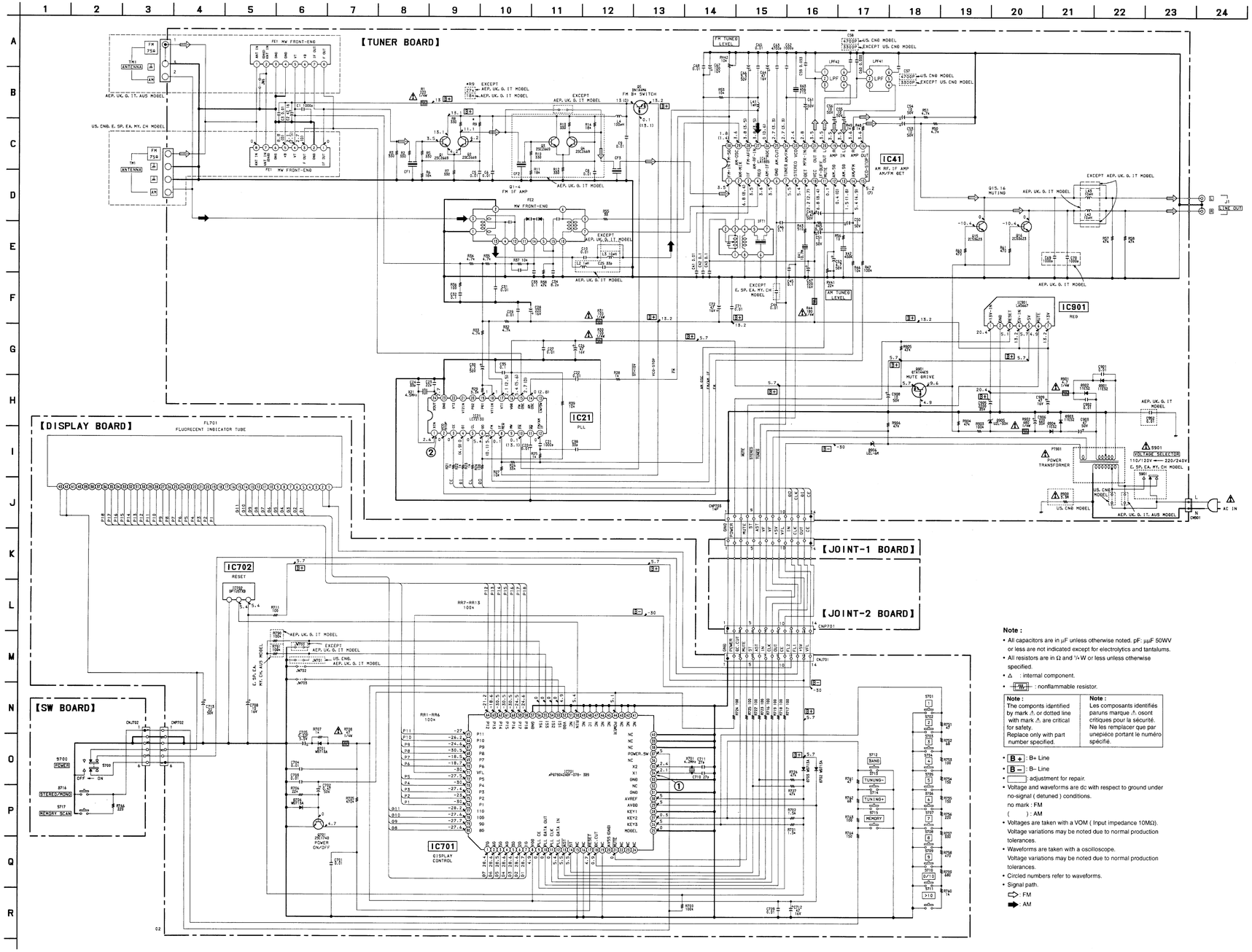
● **SEMICONDUCTOR LOCATION**

Ref. No.	Location
D701	I-10
D702	I-12
D703	I-12
D704	I-9
D901	D-9
D902	D-8
D903	E-8
D904	E-8
D905	E-9
D906	F-10
IC21	E-2
IC41	F-4
IC701	J-11
IC702	J-7
IC901	E-10
Q1	E-3
Q2	E-3
Q3	F-3
Q4	F-3
Q5	E-4
Q15	B-6
Q16	B-6
Q701	I-9
Q901	F-10

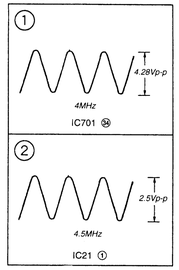
Note:

- ○— : parts extracted from the component side.
- ▒▒▒ : Pattern on the side which is seen.



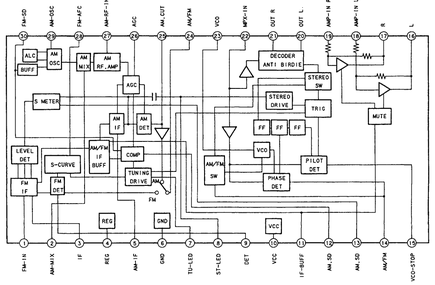


● WAVEFORMS

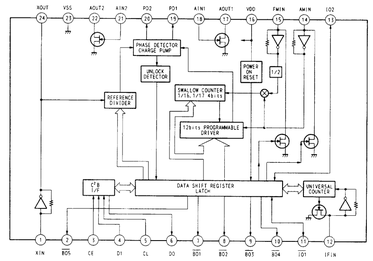


● IC BLOCK DIAGRAMS

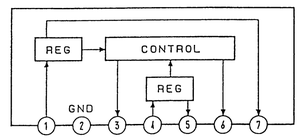
IC41 LA1835



IC21 LC72130



IC901 LA5667



Note :

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- Δ : internal component.
- ⚠ : nonflammable resistor.

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés parums marque ⚠ osont critiques pour la sécurité. Ne les remplacer que par unepièce portant le numéro spécifié.

- B+ : B+ Line
- B− : B− Line
- adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM

SECTION 5
EXPLODED VIEW

NOTE :

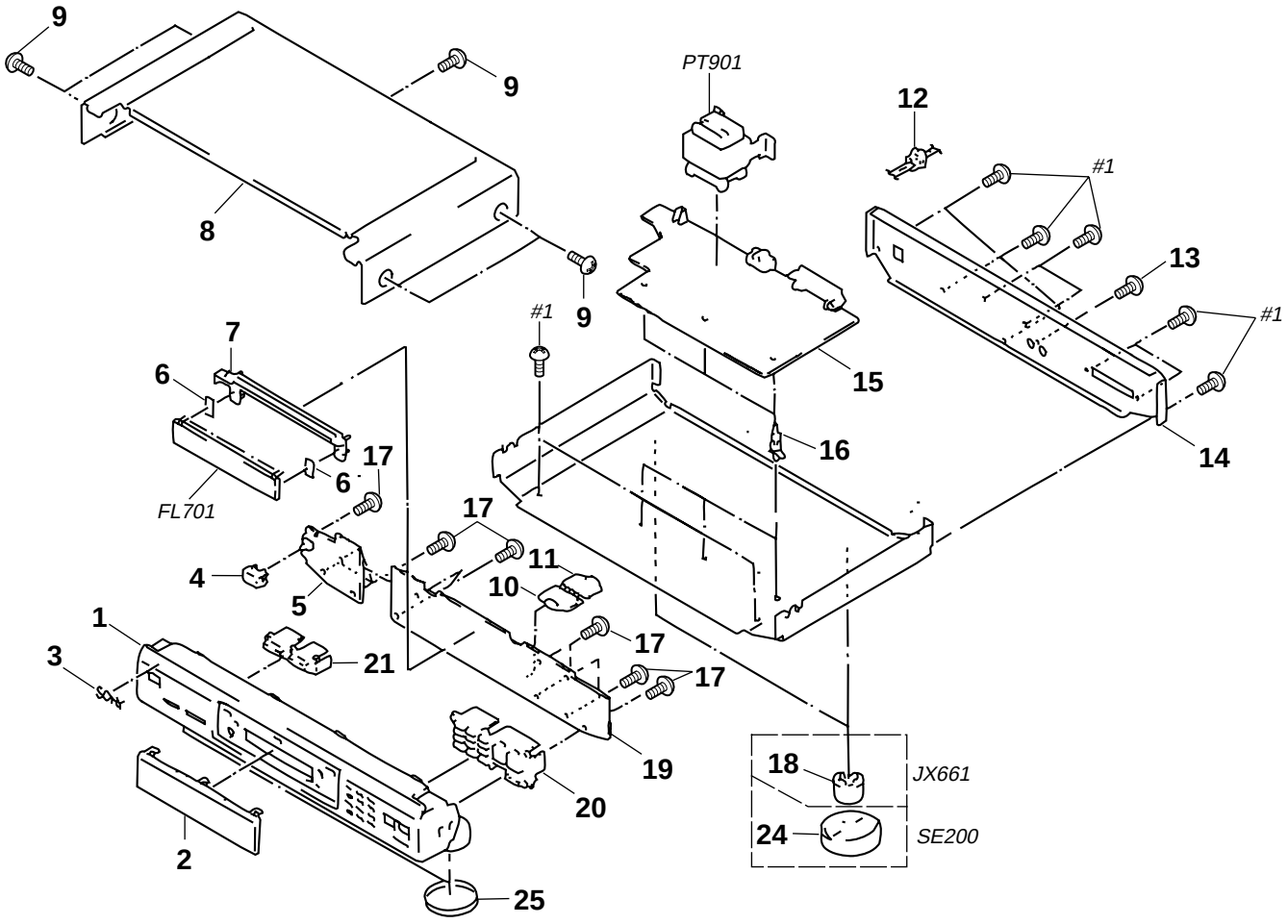
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation

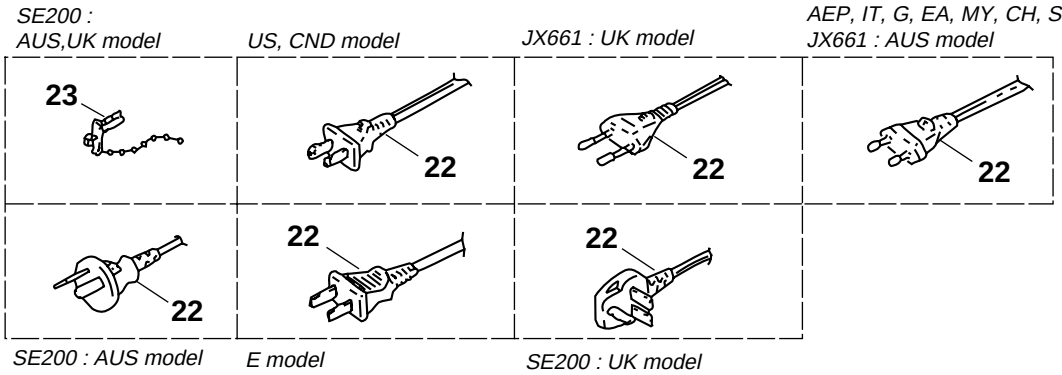
CND	: Canadian	SP	: Singapore
AUS	: Australian	G	: German
EA	: Saudi Arabia	IT	: Italian
MY	: Malaysia	CH	: Chinese

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. FRONT SECTION





Ref. No.	Part No.	Description	Remark
1	4-979-926-01	PANEL, FRONT (JX661)	
1	4-979-926-11	PANEL, FRONT (SE200)	
2	4-979-927-01	WINDOW	
3	4-963-404-21	EMBLEM (5-A), SONY	
4	4-980-109-01	BUTTON (P-M)	
* 5	1-659-920-11	SW BOARD	
* 6	4-921-941-01	CUSHION (FL)	
* 7	4-979-925-01	HOLDER (FL-D)	
* 8	4-979-924-01	CASE (407026)	
9	3-704-366-01	SCREW (CASE) (M3X8)	
* 10	1-659-922-11	JOINT-2 BOARD	
* 11	1-659-921-11	JOINT-1 BOARD	
* 12	3-703-244-00	BUSHING (2104), CORD	
13	3-704-515-01	SCREW (BV/RING)	
* 14	4-979-923-01	PANEL, BACK (JX661:US)	
* 14	4-979-923-11	PANEL, BACK (JX661:AEP,G,IT)	
* 14	4-979-923-21	PANEL, BACK (JX661:E)	
* 14	4-979-923-31	PANEL, BACK (JX661:UK)	
* 14	4-979-923-41	PANEL, BACK (JX661:CND)	
* 14	4-979-923-61	PANEL, BACK (JX661:SP)	
* 14	4-979-923-71	PANEL, BACK (JX661:AUS)	
* 14	4-980-114-01	PANEL, BACK (SE200:AEP,IT)	
* 14	4-980-114-11	PANEL, BACK (SE200:E,SP,EA,MY,CH)	
* 14	4-980-114-21	PANEL, BACK (SE200:UK)	
* 14	4-980-114-31	PANEL, BACK (SE200:AUS)	
* 15	A-4389-238-A	TUNER BOARD, COMPLETE (US,CND)	
* 15	A-4389-243-A	TUNER BOARD, COMPLETE (AEP,UK,G,IT)	
* 15	A-4389-245-A	TUNER BOARD, COMPLETE (E,SP,EA,MY,CH)	
* 15	A-4389- -A	TUNER BOARD, COMPLETE (AUS)	
* 16	3-346-265-31	HOLDER, PC BOARD	
17	4-951-620-01	SCREW (2.6X8), +BVTP	
18	X-3371-405-1	FOOT (SMALL) ASSY (JX661)	
* 19	A-4389-239-A	DISPLAY BOARD, COMPLETE(US,CND)	
* 19	A-4389-244-A	DISPLAY BOARD, COMPLETE(AEP,UK,G,IT)	
* 19	A-4389-246-A	DISPLAY BOARD, COMPLETE(E,SP,EA,MY,CH)	
* 19	A-4389-2 -A	DISPLAY BOARD, COMPLETE(AUS)	
20	4-979-928-01	BUTTON (FUNCTION)	
21	4-979-929-01	BUTTON (ENTER)	
⚠ 22	1-558-943-41	CORD, POWER (E)	
⚠ 22	1-558-945-21	CORD, POWER (POLAR.SPT-1)(US,CND)	
⚠ 22	1-575-651-21	CORD, POWER (AEP,IT,G,EA,MY,CH,SP, JX661:AUS)	
⚠ 22	1-696-845-11	CORD, POWER (SE200:AUS)	
⚠ 22	1-751-529-11	CORD, POWER (SE200:UK)	
⚠ 22	1-769-639-11	CORD, POWER (JX661:UK)	
23	4-956-370-12	BAND, PLUG FIXED (SE200:AUS,UK)	
24	X-4947-207-1	FOOT ASSY (F50150S) (SE200)	
25	4-977-593-11	RING (DIA 50), ORNAMENTAL (SE200)	
FL701	1-517-516-11	INDICATOR TUBE, FLUORESCENT	
⚠ PT901	1-429-466-11	TRANSFORMER, POWER (US,CND)	
⚠ PT901	1-429-467-11	TRANSFORMER, POWER (EXCEPT US,CND)	

SECTION 6
ELECTRICAL PARTS LIST

DISPLAY

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H
- Abbreviation

CND	: Canadian	SP	: Singapore
AUS	: Australian	G	: German
EA	: Saudi Arabia	IT	: Italian
MY	: Malaysia	CH	: Chinese

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-4389-239-A	DISPLAY BOARD, COMPLETE(US,CND)			
*	A-4389-244-A	DISPLAY BOARD, COMPLETE(AEP,UK,G,IT)			
*	A-4389-246-A	DISPLAY BOARD, COMPLETE(E,SP,EA,MY,CH)			
		**********			
*	4-921-941-01	CUSHION (FL)			
*	4-979-925-01	HOLDER (FL-D)			
		< CAPACITOR >			
C701	1-162-306-11	CERAMIC	0.01uF	30% 16V	
C702	1-124-465-00	ELECT	0.47uF	20% 50V	
C703	1-162-306-11	CERAMIC	0.01uF	30% 16V	
C704	1-162-306-11	CERAMIC	0.01uF	30% 16V	
C705	1-104-905-11	CAPACITOR	0.22F	5.5V	
C708	1-126-157-11	ELECT	10uF	20% 16V	
C709	1-162-306-11	CERAMIC	0.01uF	30% 16V	
C710	1-***-***-**	CERAMIC	27PF		
C711	1-***-***-**	CERAMIC	27PF		
C712	1-104-664-11	ELECT	47uF	20% 16V	
C713	1-126-965-11	ELECT	22uF	20% 50V	
		< CONNECTOR >			
CNJ701	1-774-342-11	PLUG, CONNECTOR (PC BOARD) 14P			
CNP702	1-750-195-11	CONNECTOR, BOARD TO BOARD 6P			
		< DIODE >			
D701	8-719-987-63	DIODE 1N4148M			
D702	8-719-987-63	DIODE 1N4148M			
D703	8-719-987-63	DIODE 1N4148M			
D704	8-719-987-63	DIODE 1N4148M			
		< INDICATOR TUBE >			
FL701	1-517-516-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC701	8-759-380-14	IC uPD78042AGF-078-3B9			
IC702	8-749-923-43	IC GP1U57XB			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q701	8-729-620-05	TRANSISTOR 2SC2603-EF			
		< RESISTOR >			
R700	1-249-441-11	CARBON	100K	5% 1/4W	
R701	1-249-419-11	CARBON	1.5K	5% 1/4W	
R702	1-249-419-11	CARBON	1.5K	5% 1/4W	
R705	1-247-895-00	CARBON	470K	5% 1/4W	
R706	1-249-433-11	CARBON	22K	5% 1/4W	
R707	1-249-417-11	CARBON	1K	5% 1/4W	
⚠ R708	1-249-401-11	CARBON	47	5% 1/4W	F
R711	1-247-807-31	CARBON	100	5% 1/4W	
R716	1-247-807-31	CARBON	100	5% 1/4W	
R717	1-247-807-31	CARBON	100	5% 1/4W	
R718	1-247-807-31	CARBON	100	5% 1/4W	
R719	1-247-807-31	CARBON	100	5% 1/4W	
R722	1-247-807-31	CARBON	100	5% 1/4W	
R723	1-247-807-31	CARBON	100	5% 1/4W	
R724	1-247-807-31	CARBON	100	5% 1/4W	
R725	1-247-807-31	CARBON	100	5% 1/4W	
R726	1-249-437-11	CARBON	47K	5% 1/4W	
R727	1-249-437-11	CARBON	47K	5% 1/4W	
R751	1-249-401-11	CARBON	47	5% 1/4W	
R752	1-249-403-11	CARBON	68	5% 1/4W	
R753	1-247-807-31	CARBON	100	5% 1/4W	
R754	1-249-407-11	CARBON	150	5% 1/4W	
R755	1-249-407-11	CARBON	150	5% 1/4W	
R756	1-249-409-11	CARBON	220	5% 1/4W	
R757	1-249-411-11	CARBON	330	5% 1/4W	
R758	1-249-413-11	CARBON	470	5% 1/4W	
R759	1-249-415-11	CARBON	680	5% 1/4W	
R760	1-249-417-11	CARBON	1K	5% 1/4W	
R761	1-249-401-11	CARBON	47	5% 1/4W	
R762	1-249-403-11	CARBON	68	5% 1/4W	
R763	1-247-807-31	CARBON	100	5% 1/4W	
R764	1-249-407-11	CARBON	150	5% 1/4W	

DISPLAY JOINT-1 JOINT-2 SW TUNER

Ref. No.	Part No.	Description				Remark
R790	1-249-441-11	CARBON	100K	5%	1/4W	(AEP,UK,G,IT)
R791	1-249-441-11	CARBON	100K	5%	1/4W	(E,SP,EA,MY,CH,AUS)
		< SWITCH >				
S701	1-554-303-21	SWITCH, TACTILE (1)				
S702	1-554-303-21	SWITCH, TACTILE (2)				
S703	1-554-303-21	SWITCH, TACTILE (3)				
S704	1-554-303-21	SWITCH, TACTILE (4)				
S705	1-554-303-21	SWITCH, TACTILE (5)				
S706	1-554-303-21	SWITCH, TACTILE (6)				
S707	1-554-303-21	SWITCH, TACTILE (7)				
S708	1-554-303-21	SWITCH, TACTILE (8)				
S709	1-554-303-21	SWITCH, TACTILE (9)				
S710	1-554-303-21	SWITCH, TACTILE (0/10)				
S711	1-554-303-21	SWITCH, TACTILE (>10)				
S712	1-554-303-21	SWITCH, TACTILE (BAND)				
S713	1-554-303-21	SWITCH, TACTILE (TUNING –)				
S714	1-554-303-21	SWITCH, TACTILE (TUNING +)				
S715	1-554-303-21	SWITCH, TACTILE (MEMORY)				
		< VIBRATOR >				
X701	1-760-422-11	VIBRATOR, CRYSTAL (4.2MHz)				
**********						
*	1-659-921-11	JOINT-1 BOARD				
		**********				
		< CONNECTOR >				
* CNJ703	1-750-188-11	CONNECTOR, BOARD TO BOARD 14P				
**********						
*	1-659-922-11	JOINT-2 BOARD				
		**********				
		< CONNECTOR >				
CNP701	1-774-336-11	SOCKET, CONNECTOR(PC BOARD)14P				
**********						
*	1-659-920-11	SW BOARD				
		********				
		< CONNECTOR >				
CNJ702	1-750-186-11	CONNECTOR, BOARD TO BOARD 6P				
		< RESISTOR >				
R766	1-249-407-11	CARBON	150	5%	1/4W	
		< SWITCH >				
S700	1-554-303-21	SWITCH, TACTILE (POWER)				
S716	1-554-303-21	SWITCH, TACTILE (STEREO/MONO)				
S717	1-554-303-21	SWITCH, TACTILE (MEMORY SCAN)				
**********						

Ref. No.	Part No.	Description				Remark
*	A-4389-238-A	TUNER BOARD, COMPLETE (US,CND)				
*	A-4389-243-A	TUNER BOARD, COMPLETE (AEP,UK,G,IT)				
*	A-4389-245-A	TUNER BOARD, COMPLETE (E,SP,EA,MY,CH)				
		**********				
		< CAPACITOR >				
C1	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C2	1-126-967-11	ELECT	47uF	20%	16V	
C3	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C5	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C6	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C8	1-162-306-11	CERAMIC	0.01uF	30%	16V	(AEP,UK,G,IT)
C9	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C10	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C20	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C21	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C22	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C23	1-102-959-00	CERAMIC	22PF	5%	50V	
C24	1-102-518-11	CERAMIC	33PF	5%	50V	
C25	1-162-211-31	CERAMIC	33PF	5%	50V	(AEP,UK,G,IT)
C26	1-126-967-11	ELECT	47uF	20%	16V	
C27	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C28	1-126-934-11	ELECT	220uF	20%	16V	
C29	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C30	1-124-925-11	ELECT	2.2uF	20%	100V	
C31	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C32	1-164-159-11	CERAMIC	0.1uF		50V	
C33	1-164-159-11	CERAMIC	0.1uF		50V	
C34	1-162-198-31	CERAMIC	8.2PF	10%	50V	
C35	1-164-159-11	CERAMIC	0.1uF		50V	
C38	1-162-211-31	CERAMIC	33PF	5%	50V	
C41	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C42	1-164-159-11	CERAMIC	0.1uF		50V	
C43	1-164-159-11	CERAMIC	0.1uF		50V	
C44	1-162-306-11	CERAMIC	0.01uF	30%	16V	(EXCEPT E,SP,EA,MY,CH)
C45	1-164-159-11	CERAMIC	0.1uF		50V	
C46	1-164-159-11	CERAMIC	0.1uF		50V	
C47	1-126-934-11	ELECT	220uF	20%	16V	
C49	1-124-902-00	ELECT	0.47uF	20%	50V	
C50	1-124-903-11	ELECT	1uF	20%	50V	
C51	1-124-903-11	ELECT	1uF	20%	50V	
C52	1-126-963-11	ELECT	4.7uF	20%	50V	
C53	1-126-964-11	ELECT	10uF	20%	50V	
C54	1-126-964-11	ELECT	10uF	20%	50V	
C55	1-126-964-11	ELECT	10uF	20%	50V	
C56	1-126-964-11	ELECT	10uF	20%	50V	
C57	1-162-303-11	CERAMIC	0.0033uF	30%	16V	(EXCEPT US,CND)
C57	1-162-600-11	CERAMIC	0.0047uF	30%	16V	(US,CND)

Ref. No.	Part No.	Description			Remark
C58	1-162-303-11	CERAMIC	0.0033uF	30% 16V	(EXCEPT US,CND)
C58	1-162-600-11	CERAMIC	0.0047uF	30% 16V	(US,CND)
C59	1-136-159-00	FILM	0.033uF	5% 50V	
C60	1-136-159-00	FILM	0.033uF	5% 50V	
C61	1-124-903-11	ELECT	1uF	20% 50V	
C62	1-162-294-31	CERAMIC	0.001uF	10% 50V	
C63	1-162-600-11	CERAMIC	0.0047uF	30% 16V	
C64	1-126-967-11	ELECT	47uF	20% 16V	
C65	1-162-306-11	CERAMIC	0.01uF	30% 16V	
C66	1-126-962-11	ELECT	3.3uF	20% 50V	
C67	1-126-933-11	ELECT	100uF	20% 10V	
C68	1-162-306-11	CERAMIC	0.01uF	30% 16V	
C69	1-162-294-31	CERAMIC	0.001uF	10% 50V	(AEP,UK,G,IT)
C70	1-162-294-31	CERAMIC	0.001uF	10% 50V	(AEP,UK,G,IT)
C71	1-162-306-11	CERAMIC	0.01uF	30% 16V	
C72	1-126-967-11	ELECT	47uF	20% 16V	
C901	1-101-004-00	CERAMIC	0.01uF	50V	
C902	1-101-004-00	CERAMIC	0.01uF	50V	
C903	1-126-967-11	ELECT	47uF	20% 50V	
C905	1-126-953-11	ELECT	2200uF	20% 35V	
C906	1-126-949-11	ELECT	220uF	20% 35V	
C908	1-126-964-11	ELECT	10uF	20% 50V	
C909	1-126-967-11	ELECT	47uF	20% 16V	
C952	1-162-306-11	CERAMIC	0.01uF	30% 16V	(AEP,UK,G,IT)
		< FILTER >			
CF1	1-567-389-11	FILTER, CERAMIC (US,CND,E,SP,EA,MY,CH,AUS)			
CF1	1-579-374-71	FILTER, CERAMIC (AEP,UK,G,IT)			
CF2	1-760-393-11	FILTER, CERAMIC (AEP,UK,G,IT)			
CF3	1-567-389-11	FILTER, CERAMIC (US,CND,E,SP,EA,MY,CH)			
CF3	1-760-393-11	FILTER, CERAMIC (AEP,UK,G,IT)			
		< CONNECTOR >			
* CNP703	1-750-197-11	CONNECTOR, BOARD TO BOARD 14P			
CNP901	1-580-230-11	PIN, CONNECTOR 2P			
		< DIODE >			
D901	8-719-024-99	DIODE 11ES2-NTA2B			
D902	8-719-024-99	DIODE 11ES2-NTA2B			
D903	8-719-024-99	DIODE 11ES2-NTA2B			
D904	8-719-024-99	DIODE 11ES2-NTA2B			
D905	8-719-934-22	DIODE HZS30-2L			
D906	8-719-933-41	DIODE UZL-6H3			
		< FRONT END >			
FE1	1-693-090-51	ENCAPSULATED COMPONENT			(US,CND,E,SP,EA,MY,CH,AUS)
FE1	1-233-541-11	FRONT END (4 GANG)			(AEP,UK,G,IT)
FE2	1-239-260-11	ENCAPSULATED COMPONENT			
		< IC >			
IC21	8-759-288-54	IC LC72130			
IC41	8-759-176-03	IC LA1835			
IC901	8-759-820-09	IC LA5667			
		< IFT >			
IFT41	1-409-636-11	TRANSFORMER,IF (CERAMIC FILTER)			
		< JACK >			
J1	1-568-250-11	JACK, PIN 2P (LINE OUT)			
		< COIL >			
L2	*-***-***-*	INDUCTOR			(AEP,UK,G,IT)
L3	1-410-509-11	INDUCTOR	10uH		(AEP,UK,G,IT)
L4	1-410-521-11	INDUCTOR	100uH		
L41	1-410-686-11	INDUCTOR	1mH		
L42	1-410-509-11	INDUCTOR	10uH		(AEP,UK,G,IT)
L43	1-410-509-11	INDUCTOR	10uH		(AEP,UK,G,IT)
		< FILTER >			
LPF41	1-239-597-11	FILTER, LOW PASS			
LPF42	1-239-597-11	FILTER, LOW PASS			
		< TRANSFORMER >			
⚠ PT901	1-429-466-11	TRANSFORMER, POWER (US,CND)			
⚠ PT901	1-429-467-11	TRANSFORMER, POWER (EXCEPT US,CND)			
		< TRANSISTOR >			
Q1	8-729-230-99	TRANSISTOR 2SC2669-OY			
Q2	8-729-230-99	TRANSISTOR 2SC2669-OY			
Q3	8-729-230-99	TRANSISTOR 2SC2669-OY			(AEP,UK,G,IT)
Q4	8-729-230-99	TRANSISTOR 2SC2669-OY			(AEP,UK,G,IT)
Q5	8-729-422-57	TRANSISTOR UN4111			
Q15	8-729-141-30	TRANSISTOR 2SC3623A-LK			
Q16	8-729-141-30	TRANSISTOR 2SC3623A-LK			
Q901	8-729-900-65	TRANSISTOR DTA144ES			
		< RESISTOR >			
⚠ R1	1-249-409-11	CARBON	220	5% 1/4W	F
R2	1-249-411-11	CARBON	330	5% 1/4W	
R3	1-249-411-11	CARBON	330	5% 1/4W	
R5	1-249-411-11	CARBON	330	5% 1/4W	
R6	1-249-432-11	CARBON	18K	5% 1/4W	
R7	1-249-411-11	CARBON	330	5% 1/4W	
R8	1-249-411-11	CARBON	330	5% 1/4W	
R9	1-249-434-11	CARBON	27K	5% 1/4W	(EXCEPT:AEP,UK,G,IT)
R9	1-249-432-11	CARBON	18K	5% 1/4W	(AEP,UK,G,IT)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

TUNER

Ref. No.	Part No.	Description			Remark
R10	1-249-411-11	CARBON	330	5% 1/4W	(AEP,UK,G,IT)
R11	1-249-432-11	CARBON	18K	5% 1/4W	(AEP,UK,G,IT)
R12	1-249-411-11	CARBON	330	5% 1/4W	(AEP,UK,G,IT)
R13	1-249-411-11	CARBON	330	5% 1/4W	(AEP,UK,G,IT)
R14	1-249-432-11	CARBON	18K	5% 1/4W	(AEP,UK,G,IT)
R21	1-249-417-11	CARBON	1K	5% 1/4W	
R22	1-249-417-11	CARBON	1K	5% 1/4W	
R23	1-249-417-11	CARBON	1K	5% 1/4W	
R24	1-247-807-31	CARBON	100	5% 1/4W	
R25	1-249-417-11	CARBON	1K	5% 1/4W	
R26	1-249-435-11	CARBON	33K	5% 1/4W	
R27	1-249-429-11	CARBON	10K	5% 1/4W	
R28	1-249-417-11	CARBON	1K	5% 1/4W	
R29	1-249-423-11	CARBON	3.3K	5% 1/4W	
⚠ R30	1-249-405-11	CARBON	100	5% 1/4W	F
⚠ R31	1-249-405-11	CARBON	100	5% 1/4W	F
R32	1-249-425-11	CARBON	4.7K	5% 1/4W	
R33	1-249-425-11	CARBON	4.7K	5% 1/4W	
R34	1-249-425-11	CARBON	4.7K	5% 1/4W	
R35	1-249-425-11	CARBON	4.7K	5% 1/4W	
R36	1-247-807-31	CARBON	100	5% 1/4W	
R37	1-249-429-11	CARBON	10K	5% 1/4W	
R38	1-249-437-11	CARBON	47K	5% 1/4W	
R39	1-249-429-11	CARBON	10K	5% 1/4W	
R43	1-249-442-11	CARBON	510	5% 1/4W	
⚠ R44	1-249-408-11	CARBON	180	5% 1/4W	F
R45	1-249-423-11	CARBON	3.3K	5% 1/4W	
R46	1-249-429-11	CARBON	10K	5% 1/4W	
R47	1-249-441-11	CARBON	100K	5% 1/4W	
R48	1-249-417-11	CARBON	1K	5% 1/4W	
R49	1-249-417-11	CARBON	1K	5% 1/4W	
R50	1-249-425-11	CARBON	4.7K	5% 1/4W	
R51	1-249-425-11	CARBON	4.7K	5% 1/4W	
R53	1-249-429-11	CARBON	10K	5% 1/4W	
R56	1-249-393-11	CARBON	10	5% 1/4W	
R57	1-249-437-11	CARBON	47K	5% 1/4W	
R58	1-249-437-11	CARBON	47K	5% 1/4W	
R60	1-249-413-11	CARBON	470	5% 1/4W	
R61	1-249-413-11	CARBON	470	5% 1/4W	
⚠ R900	1-202-725-00	SOLID	3.3M	10% 1/2W	F (US,CND)
⚠ R901	1-249-389-11	CARBON	4.7	5% 1/4W	F
⚠ R902	1-249-415-11	CARBON	680	5% 1/4W	F
R903	1-249-441-11	CARBON	100K	5% 1/4W	
R904	1-249-437-11	CARBON	47K	5% 1/4W	
R905	1-249-437-11	CARBON	47K	5% 1/4W	
R906	1-249-437-11	CARBON	47K	5% 1/4W	

Ref. No.	Part No.	Description	Remark
		< VARIABLE RESISTOR >	
RV41	1-238-601-11	RES, ADJ, CARBON 22K (AM TUNED LEVEL)	
RV42	1-238-600-11	RES, ADJ, CARBON 10K (FM TUNED LEVEL)	
		< SWITCH >	
⚠ S901	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR)(E,SP,EA,MY,CH)	
		< TERMINAL >	
TM1	1-537-238-21	TERMINAL BOARD (ANTENNA)	(US,CND,E,SP,EA,MY,CH)
TM1	1-537-488-11	TERMINAL BOARD (ANT) (ANTENNA)	(AEP,UK,G,IT,AUS)
		< VIBRATOR >	
X21	1-760-549-11	VIBRATOR, CRYSTAL (4.5MHz)	
X41	1-760-220-11	FILTER, CERAMIC (10.7MHz)	
X42	1-527-981-00	FILTER, CERAMIC (450kHz)	
X43	1-577-075-11	OSCILLATOR, CERAMIC (19kHz)	
**********			
		MISCELLANEOUS	
		**********	
⚠ 22	1-558-943-41	CORD, POWER (E)	
⚠ 22	1-558-945-21	CORD, POWER (POLAR.SPT-1)(US,CND)	
⚠ 22	1-575-651-21	CORD, POWER	(AEP,IT,G,EA,MY,CH,SP,JX661:AUS)
⚠ 22	1-696-845-11	CORD, POWER (SE200:AUS)	
⚠ 22	1-751-529-11	CORD, POWER (SE200:UK)	
⚠ 22	1-769-639-11	CORD, POWER (JX661:UK)	
FL701	1-517-516-11	INDICATOR TUBE, FLUORESCENT	
⚠ PT901	1-429-466-11	TRANSFORMER, POWER (US,CND)	
⚠ PT901	1-429-467-11	TRANSFORMER, POWER (EXCEPT US,CND)	
⚠ S901	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR)(E,SP,EA,MY,CH)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-501-374-11	ANTENNA, LOOP	
	1-501-594-11	ANTENNA (FM)(AEP,UK,G,IT,AUS)	
	1-501-659-41	ANTENNA (FM) (US,CND,E,SP,EA,MY,CH)	
	1-551-734-11	CORD, CONNECTION	
	3-810-504-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH)	(US,CND)
	3-810-504-21	MANUAL, INSTRUCTION (ENGLISH,FRENCH, SPANISH,CHINESE)(E,SP,EA,MY,CH,AUS)	
	3-810-504-31	MANUAL, INSTRUCTION (ENGLISH,FRENCH, SPANISH,PORTUGUESE)(AEP,UK)	
	3-810-504-41	MANUAL, INSTRUCTION (GERMAN,DUTCH, SWEDISH,ITALIAN)(AEP,G,IT)	
*	4-980-413-01	CUSHION (JX661:AUS)	
*	4-980-413-01	CUSHION (EXCEPT JX661:AUS)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	4-981-470-01	INDIVIDUAL CARTON (US)	
*	4-981-470-11	INDIVIDUAL CARTON (JX661:AEP,UK,G,IT)	
*	4-981-470-21	INDIVIDUAL CARTON (SE200:AEP,UK,IT)	
*	4-981-470-31	INDIVIDUAL CARTON (SE200:AUS,E,SP,EA,MY,CH)	

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HARDWARE LIST
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#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 TT(B)	

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